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ABSTRACT

The purpose of this study was to compare cognitive effects of two developmentally sequenced preschool curricula with outcomes of a traditional eclectic preschool curriculum. Specifically, pretest and posttest scores for children taught with the Brigance Diagnostic Inventory of Early Development and the Portage Guide to Early Education were compared with scores for children taught with the First School Experiences Program. The Cooperative Preschool Inventory was used for assessment. The study was conducted with children enrolled in Title I prekindergarten and Head Start classes in Cincinnati during 1981-82. Four prekindergarten teachers were assigned to each of the three comparison groups. Of approximately 380 children initially enrolled in the 24 participating classes, 320 remained for the posttest. Results indicated children in the Portage classes made less progress than children in either the Brigance or control classes. Since student record management problems were noted by all eight teachers in the experimental classes, it is possible that detailed assessment and record keeping demands interfered with instructional time. It was concluded that careful evaluation should accompany any major shift in curriculum so that effects can be identified early. (RH)

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A Comparison of the Outcomes of Three Early Childhood Programs Based Upon Developmental Sequencing

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This study compares the cognitive effects of two developmentally sequenced preschool curricula with a comparison group enrolled in a traditional eclectic preschool program. The results show that children in the Portage classes showed significantly lower progress than the children in either the Brigance or control classes. Student record management problems were noted by all eight teachers in the experimental classes.

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Introduction

This study reports the first year findings in a three-year longitudinal study of utilizing developmentally sequenced curricula in preschool programs. There were two objectives of interest that are associated with the first year. The primary purpose was to compare the cognitive effects of developmentally sequenced curricula with a traditional eclectic preschool program. Pretest-posttest scores of children taught with the Brigance Diagnostic Inventory of Early Development (Brigance, 1978) and the Portage Guide to Early Education (Bulma, 1976) were compared with control classes using a traditional preschool curriculum. The second purpose was to determine what management problems teachers would encounter when attempting to create, maintain and use the individualized assessment records that are a required part of developmentally sequenced curricula.

Background

An understanding has existed for many years that there is a hierarchy of developmentally appropriate behaviors for young children. These understandings were given sharper focus, however, by the works of psychologists like Terman (1937) and Gesell (1946). By the mid 1940's reasonably reliable age-referenced norms were established for children from birth to 60 months and, as a result, gross judgements of an individual's rate of development could be made.

Educators, inspired by the works of Piaget (1957, 1970), Lavatelli (1970) and others, soon became interested in using this framework as a basis for sequential instruction. Briefly stated, they believed that learning is best grounded in a logical progression of interdependent objectives which will ultimately simplify the task for both student and teacher.

Although the literature abounds with developmental learning studies associated with special education programs, there seems to be little, if any, information regarding its benefits in regular, Headstart, or other compensatory preschool classroom settings. The literature search conducted for this study is by no means exhaustive. However, the fact that no published documentation of comparative benefits between developmentally sequenced curricula programs and traditional preschool approaches could be easily found is an indication that research needs to be done in this area. Therefore, the early childhood component of the Cincinnati Public Schools initiated a three year quasi-experimental longitudinal study to investigate the differential effects.

The two programs chosen for this study as well as the control group all share a common thread of developmental sequencing. The major differences among them are simply the level of specificity and the methods of recording and managing the individual pupil data inherent in all such programs. Both the Brigance and Portage programs suggest extensive initial screening plus daily review and updating of individual and class records of achievement in five developmental areas. The control group continued using a more traditional guide, First School Experiences (1971), which requires less detailed record keeping based on a monthly review of progress.

Methods

The study was conducted in the Cincinnati public school district with an enrollment for 1981-82 of approximately 51,000. Children involved in the study were four years of age on or before September 30, 1981. They were enrolled in Title I pre-kindergarten and Headstart classes.

From a pool of forty-five pre-kindergarten teachers, twelve were selected for the study. All had demonstrated high levels of abilities according to regular appraisals which indicated that all were rated "very good" to

"excellent." Supervisory observations supported the appraisals. Since each teacher had two classes (AM and PM) of 15-17 children each, there was a total of 24 classes.

Four teachers each were randomly assigned to one of three groups: The Brigance Inventory, the Portage Guide, or the control. All teachers in both the Brigance and Portage groups received forty hours of preservice training during the summer of 1981 and twelve hours inservice during the following school year. They also participated in the same inservice programs, five half-day sessions during the year, as the control group.

There were approximately 380 children involved in the 24 classes at the beginning of the year. Due to normal mobility, only 320 students remained for the April posttest. Children in all three groups were individually pretested in September, 1981, and posttested in April, 1982, using the Cooperative Preschool Inventory (CPI). Classroom teachers administered the CPI as a matter of required routine screening and evaluation; in addition, other members of the preschool staff were trained to assist in the administration of the test. The data were analyzed using one-way analysis of variance between the cognitive scores of the treatment and control groups.

Close supervision and an ongoing inservice program supplied ample opportunities for teachers in the experimental groups to share techniques that they had developed for handling and using the assessment data.

Program Descriptions

Brigance Inventory of Early Development

The Inventory of Early Development is designed to be used in programs for infants and children below the developmental level of seven years. It functions as:

1. an assessment instrument.
2. an instructional guide.
3. a record keeping tracking system.

4. a tool for developing and communicating an individualized education program.
5. a resource for training parents and professionals.

In summary, the inventory brings together child growth, child development, early childhood curriculum and assessment, as well as attempting to simplify and combine the processes of assessing, diagnosing, record keeping and instructional planning.

A brief description of the developmental areas addressed in the Brigance Inventory includes:

1. "Gross Motor Skills and Behaviors" such as movement skills like running, jumping, balancing, rolling, throwing and rhythm.
2. "Fine Motor Skills and Behaviors" involving the use of hands and fingers in grasping and manipulating.
3. "Self Help Skills" that the child performs in order to function with the greatest possible degree of independence, i.e., eating, toileting, dressing, performing household chores.
4. "Speech and Language" concerning primarily vocabulary, social speech, articulation, and verbal directions.
5. "General Knowledge and Comprehension" such as knowledge and concepts of body parts, colors, shapes, and time relationships.
6. "Readiness" relating to skills frequently listed as having great value in predicting reading success. They include visual discrimination, knowledge of upper and lower case letters and response to and experience with books.
7. "Basic Math" involving rote counting, number concepts, numeral recognition, numerals in sequential order, ordinal comprehension and recognition of money.

Records are required for every child in the classroom and are recorded in a Group Record Book during the year. The records are used to assist instructors in setting objectives for each child. It also enables instructors to establish groups with similar needs.

Portage Guide to Early Education

The Portage Guide to Early Education (revised edition) is comprised of five developmental areas plus a section on infant stimulation. Since the areas of infant stimulation, self-help, motor, socialization, language and cognitive skills are not isolated from each other, there is necessary overlap among the developmental areas. However, since all subjects in this study were beyond the infant stimulation stage, that area was not included in the study. The five areas that were used are briefly described below according to Portage.

1. "Socialization Skills" are those appropriate behaviors that involve living and interacting with other people. During the preschool years, social behaviors are reflected in the manner in which the child works and plays with parents, siblings, and playmates. It is postulated that these developing capabilities affect both the child's skill acquisition in other areas of development and the ability to function appropriately within the environment.

2. "Language" includes both receptive and expressive language skills following a systematic pattern of development.

3. "Self-Help Skills" are concerned with those behaviors which enable the child to care for himself in the areas of feeding, dressing, bathing, and toileting.

4. "Cognitive" (thinking) is the ability to remember, see or hear likenesses or differences, and to determine relationships between ideas and things.

5. "Motor Development" is primarily concerned with the coordinated movements of large and small muscles of the body.

The Portage program also provides a Record Book for each child. Initial assessment and ongoing daily progress is supposed to be individually recorded in the Record Book. However, major modifications were made at mid-year to simplify the assessment/record keeping tasks. Group record forms were developed and used to enhance small group instruction. This change brought the Portage Guide closer to the process used in Brigance. After the changes were made, a period of rethinking, discovery and reorganization took place and much improvement was reported by the Portage teachers and supervisors.

First School Experiences

This curriculum guide also emphasizes that preschool teachers must be knowledgeable about child development, observe and record each child's progress on a regular basis, and teach a specified number of skills which are, not surprisingly, common to most other early childhood programs. Its major difference from either the Brigance or Portage programs is that it is designed to be used in large classroom settings and therefore, more easily utilized by the participants in this study. It provides concrete examples of yearly, monthly, weekly, and daily (by hour) lesson plans which show the teacher how to use commonly available resources to observe, record, and teach seventeen to twenty children at once.

The areas outlined for the teacher are:

1. Observe, Record, Inventory student progress by administering
   a. Cooperative Preschool Inventory
   b. Observed Qualities Rating Scale
   c. Developmental Skills Inventory
2. Suggestions for room arrangement
3. Seasonal Themes
4. Special Themes (Lunch at School, Dentist, Books, Holidays, Family, etc.)
5. Language Development
6. Art (Fine motor, colors, etc.)
7. Manipulatives (Fine motor, shapes, Basic Math, etc.)
8. Physical (Gross motor)
9. Music (Rhythm, Rhymes, etc.)
10. Neighborhood, Trips, Riding the Bus

The typical developmental concepts like Self-Help, Socialization, Cognitive, Speech and Language are, of course, imbeded in all of the areas listed above.

Results

The scores of the Cooperative Preschool Inventory summarized in Table 1 show that while there were no significant differences among the three groups on the pretest, there was a difference at the .01 level on the posttest when individual scores were used, ($F = 6.86$, $df = 2, 317$). The cause of the difference rested with the Portage group which had not made gains at a rate high enough to keep pace with either the Brigance or control groups. Statistically, there were no differences between the posttest means of the Brigance and control groups; however, the Portage group was significantly lower.

Table 1. Summary of Pre and Posttest Scores, Cooperative Preschool Inventory, September 1981 - April 1982. (Maximum Raw Score = 64).

	N	Pretest Average (RS)	Std. Dev.	Posttest Average (RS)	Std. Dev.	Gain
1. Brigance Classes						
B1	24	31.3	10.2	50.2	7.7	18.9
B2	18	27.9	15.0	44.7	12.9	16.8
B3	34	15.8	8.1	48.4	6.7	29.6
B4	32	19.0	6.1	49.8	6.3	30.8
Total/Average	108	22.3	11.1	48.6	8.6	26.3
2. Portage Classes						
P1	34	30.9	12.7	46.4	7.2	16.5
P2	14	23.6	13.2	35.5	14.1	11.9
P3	30	18.6	6.1	47.4	6.8	28.6
P4	28	15.2	11.1	41.8	10.2	26.6
Total/Average	106	22.7	12.4	44.4	10.0	21.7
3. Control Classes						
C1	17	31.7	12.2	50.2	8.0	18.5
C2	24	26.7	10.1	39.6	9.0	12.9
C3	31	21.7	7.1	54.2	6.3	32.5
C4	34	20.5	8.3	45.6	8.9	25.1
Total/Average	106	24.0	10.6	47.5	9.8	23.5

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Table 1. (Continued).

ANOVA - Groups 1, 2, and 3

Pretest	SS	df	MS	F	p.
Between	217.6	2	108.8	.87	ns.
Within	39680.1	317	125.2		
Total	39897.7	319			

ANOVA - Groups 1, 2, and 3

Posttest	SS	df	MS	F	p.
Between	1193.7	2	596.9	6.86	<.01
Within	27589.1	317	87.0		
Total	28782.8	319			

ANOVA - Groups 1 vs. 3

Posttest	SS	df	MS	F	p.
Between	67.19	1	67.19	.82	ns.
Within	17312.34	210	81.66		
Total	17379.53	211			

Perhaps the major threat to the validity of this study is the unknown variability among testers even though all testers were trained by the same team of supervisors and evaluators. The Cooperative Preschool Inventory (CPI) used as the criterion measurement instrument can yield dramatically different results depending upon the judgement and/or personality of the tester. If one tester is somewhat more understanding or patient than another, a four-point difference among testers observing the same subject has been repeatedly demonstrated in numerous training sessions. In order to determine what effect tester bias had upon 1981-82 results, the testers of the top six schools were reassigned to different schools for 1982-83. Interestingly, the top six schools remained in their approximate same rank order for the 1982-83 pretest as they had in 1981-82, although in general, the overall average scores were

lower. Therefore, tester bias does not appear to have had a major influence in shaping the outcome of the 1981-82 study.

Table 2. Rank Order of Top Six Schools on Pretest, 1981-83.

Rank 1981-82	Pretest Score		Rank 1982-83	Pretest Score
1. C1	31.7	(2)	1. B1	29.3
2. b1	31.3	(1)	2. C1	28.7
3. P1	30.9	(3)	3. P1	27.9
4. B2	27.9	(4)	4. B2	25.7
5. C2	26.7	(5)	5. C2 } tied	24.3
6. P2	23.7	(6)	6. P2 }	24.3

Discussion

The change in Headstart guidelines relating to services for the handicapped place a great demand on the early childhood educators to develop individualized educational programs that are usable in mainstream classroom settings. An even larger emphasis for greater achievement gains is being stressed by virtually all funding sources. It is apparent that early childhood educators must continue to improve their programs even though they have been proved to have long term beneficial effects. (Nieman, 1981).

It is not enough, however, simply to purchase prepackaged materials and assume that pupils will benefit. Impressively and expensively printed teaching aides, complex and time consuming assessment and record keeping, and many hours of inservice and study were invested in the first year of this study. However, the hopes that having "MORE" would result in greater achievement gains were not realized. In fact, the preliminary results raise the question of whether detailed assessment and record keeping demands can actually interfere with instructional time. Although the teachers accumulated much individualized assessment data, it was not immediately clear to some how to use the information beneficially despite an extensive inservice program. It could be that

the more complex programs require even greater training or that they need a break-in period during which cognitive gains are likely to be lower.

In any event, it is clear that careful evaluation should accompany any major shift in curriculum so that effects, good or bad, can be identified early. Information gathered during the second and third years will parallel the first and should prove to be a fair test. Standardized kindergarten and first grade test scores of the 1981-82 subjects will be examined as they become available in June 1983 and 1984.

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